LAND POTENTIAL STUDY

NASH COUNTY, NORTH CAROLINA

ABSTRACT

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ABSTRACT: The Land Potential Study is one of the basic elements of the Land Development Plan. Its primary purpose is to provide information as to the potential the land within Nash County has for residential, commercial, industrial, recreational and agricultural development.

This report does not attempt to point out specific areas for certain development, but rather an attempt has been made to point out the overall potential development areas for each development feature. In several instances one development area may have several potential development qualities. The decision for each area will be shown in the Land Development Plan.

LAND POTENTIAL STUDY

NASH COUNTY, NORTH CAROLINA

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INTRODUCTION

In June of 1967 the Nash County Board of Commissioners contracted with the Division of Community Planning for technical assistance in planning studies which would provide guidelines for the future growth and development of Nash County.

Past development has been uncontrolled and allowed to grow in a haphazard manner. Through a series of planning studies, Nash County will be able to determine the needs of the county and to have an adopted plan to guide future growth. The county is presently working toward the adoption of a zoning ordinance for certain selected sites within the county. This is but one of the several studies that will be prepared.

Five studies will be prepared for Nash County. They are: 1) Land Potential Study, 2) Economic Potential Study, 3) Land Development Plan, 4) Nash County Zoning Ordinance and 5) Nash County Subdivision Regulations. The Nash County Board of Commissioners appointed nine persons from various sections of the county to the Nash County Planning Board. This Board has no legislative authority, and its functions are to prepare the various studies, review the studies and make recommendations to the Board of Commissioners.

The Land Potential Study is the first of the planning elements to be prepared for Nash County. The study determines those physical, topographic, geophysical and cultural features that create a potential for, or will influence future urban development. Such features as major drainage basins, areas subject to periodic flooding; soils and their characteristics; major utilities; areas of natural resources; major social, cultural, historic and recreational facilities and major transportation routes and facilities are analyzed.

Through the analysis of these many features, the potentials of the county can be better understood. With the potentials of the county known, the major planning study can be prepared, the Land Development Plan.

Methodology

Data was gathered through interviews with state and local agencies and by means of research and field surveys. Man-made and natural features that create or influence potentials for and deter development, are discussed and analyzed. Each feature discussed was related to its potential for residential, industrial, commercial, recreational and agricultural development. Before each potential development is discussed the existing development will be analyzed in a brief introductory paragraph. For example, a map of the different soils in Nash County will be shown, and a table will indicate by soil class its qualities for potential development. A brief discussion will follow pertaining to the soils. The first of the development potentials (example, residential potential) will then follow and be discussed, as it pertains to the soil capabilities or limitations. This type analysis will be used for each feature creating a development potential.

General Land Use

GENERALIZED LAND USE

In order that the development potentials of the county can accurately be analyzed, the present use of the land must be known. The entire county will be analyzed as one unit. The analysis will cover residential, industrial, social, cultural, recreational, transportational, and agricultural developments presently located within the county. Map 1 indicates the general land use in Nash County.

Residential Land Use

The majority of the land is used for farming purposes in the county. In conjunction with farming operations past trends have shown that many tenants have left the farm, abandoning many homes. This is evident in Nash County from a field survey taken by the Division of Community Planning in 1967 which indicated that some 571 dwelling units were vacant in the rural areas, (this does not include any portion of a municipality or its fringe area). Of these vacant dwelling units, 509 were judged dilapidated and not suitable for living purposes. This same survey indicated that approximately 64 percent of all dwelling units outside municipal boundaries are in substandard conditions. This means that major and minor repairs need to be made to the dwelling units. Of this 64 percent, 24 percent are in dilapidated condition, not suitable for living purposes. It is safe to assume that the majority of these substandard homes are renter occupied or tenant housing directly related to the farm industry.

Residential growth outside the urban areas, whether it be for farm or non-farm purposes, has taken place in a fairly uniform pattern throughout the county. Two areas in the county have not experienced growth to any degree. These are the areas adjacent the Tar River and the swamp areas adjacent Fishing and Swift Creeks. These areas are

mostly wooded and swampy and cannot be used for building purposes.

Subdivision development is not represented to a great extent in the county. Residential subdivisions are found near Rocky Mount, Nashville and Spring Hope but the majority of non-farm oriented residences are scattered throughout the county, adjacent rural roads.

Mobile homes number approximately 275 in the rural areas. The majority of these homes are located on individual lots and are in standard condition. Only one mobile home park with more than eight units exists in the rural area of Nash County. This park is located west of Easons Store on the old portion of U. S. 64 between Rocky Mount and Nashville. This park in 1967 had 83 mobile units.

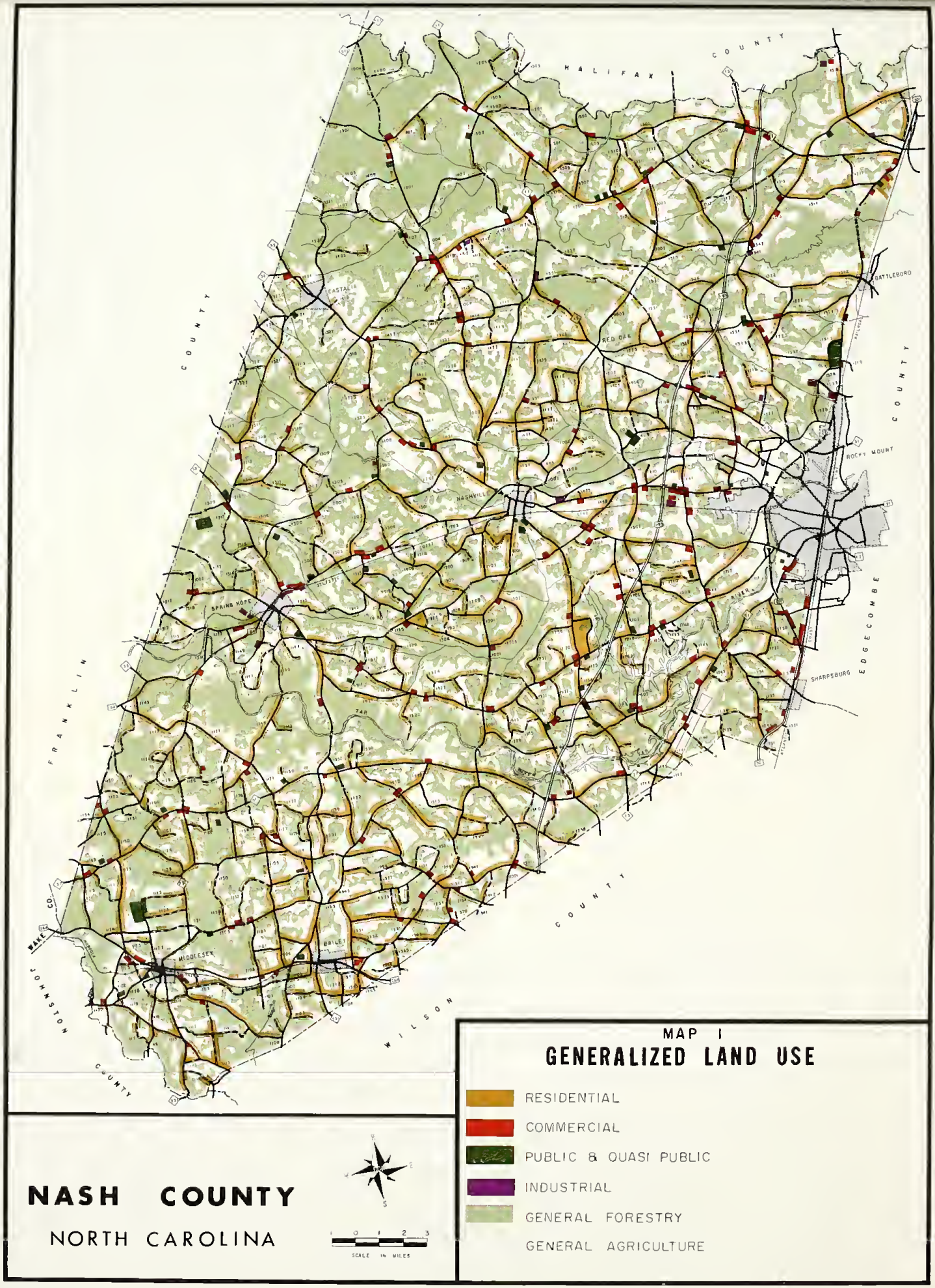
The mobile home now and in the future will house families for permanent and vacation housing, therefore, the same consideration should be given the mobile unit as is given to the permanent residential dwelling. In order to have an orderly type growth for this type housing, reasonable minimum standards should be set for the development of mobile home parks.

The remainder of the mobile home units located in the county are placed on individual lots and do not present any problems, other than some lots being cluttered with junked cars and trash. This statement should not be misinterpreted because the same situation exists in many areas of the county with residential dwellings other than mobile homes.

Areas of Urban Concentrations

Nash County is typical of many eastern North Carolina counties in that it has only one major population center with more than 10,000 persons.

Nash County is unique in one respect. Rocky Mount, Battleboro and Whitakers are divided by the Seaboard Coast



NASH COUNTY

NORTH CAROLINA

MAP I

GENERALIZED LAND USE

- RESIDENTIAL
- COMMERCIAL
- PUBLIC & QUASI PUBLIC
- INDUSTRIAL
- GENERAL FORESTRY
- GENERAL AGRICULTURE

Line Railroad which is the county line. Sharpsburg is divided by three county lines and is located in Wilson, Nash and Edgecombe counties.

Rocky Mount is the largest population center in Nash County with a total estimated 1964 population of 34,400.[1] The population for Rocky Mount and its planning area was estimated to be 40,853 in 1964. Of this total planning area population, 23,737 persons actually reside within Nash County.

Latest census figures for the remaining municipalities in Nash County were derived from the 1960 U. S. Census of Population. Nashville, the second largest incorporated area in the county had a population of 1,423. It is located near the center of the county and is the county seat. Spring Hope's population was 1,336; Middlesex's 588; and Bailey's 795.

Except for Rocky Mount, the above mentioned towns are very similar in overall land use. The core of the areas are small central business districts with the immediate surrounding areas being that of old, well kept homes. Each town is located on a major highway, either U. S. 64 or N. C. 97. All the towns listed have at least two industries, several service stations, and a few retail stores. As is common with many towns, the outlying areas are built-up with nonwhite, renter occupied, substandard housing. In most cases approximately half the substandard structures are located within the actual corporate limits but few enjoy the city conveniences of public water and sewer or paved streets.

Castalia, located in the northeast section of the county is the smallest of the incorporated areas in Nash

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[1] Rocky Mount, N. C., Staged Development Plan, Division of Community Planning, 1964, p.4, Table III.

County with a 1960 population of 267. Castalia has fewer retail stores than are found in the other towns in the county. Service stations and general stores generally make up the central business district. This town is fortunate that it does have an industry, Benweis Bag Company, employing approximately 40 persons.

The three remaining incorporated towns in the county are located on U. S. 301. Only one, however, depends greatly on the tourist trade. Sharpsburg, south of Rocky Mount has several motels, restaurants and service stations dependent on tourist trade. Sharpsburg, as do the remaining two towns on U. S. 301, shares its town proper with other counties. Being only three miles from downtown Rocky Mount, Sharpsburg has few retail shopping stores. One industry is located in Sharpsburg on U. S. 301, Caro-Craft, Inc. a custom furniture manufacturing firm. Sharpsburg's total population was 490 in 1960 with 260, 191 and 39 in Nash, Edgecombe and Wilson Counties respectively.

Battleboro with a total population of 364, 212 in Nash and 152 in Edgecombe, is the home of M. C. Braswell Farms. Battleboro does not depend heavily on the tourist trade, although it does provide some income for the town. There is a small amount of business located in the town: M. C. Braswell Farms has a general merchandising store, a farm implement company and a peanut and fertilizer company located within Battleboro, which along with other business provides much of the local income.

Whitakers, the remaining incorporated town in Nash County is located on U. S. 301, north of Battleboro and had a 1960 population of 1,004; 506 in Nash and 498 in Edgecombe County. Whitakers land use is generally residential, with several service stations located on U. S. 301. Whitakers has three industries, Goblet Veneers, Inc., Whitakers Garment Company, and Blanchard Yarn Company.

Red Oak is an unincorporated area located north of

Nashville. Its 1960 estimated population was 334. Red Oak is located at the intersection of N. C. 43 and S. R. 1003. At the intersection is a very small business center including a grocery store, fabric shop, service station and a television repair shop. Along all roads leading into this intersection are residences, most of them in standard condition. Red Oak does not have a large industry but a cotton gin plant is located on N. C. 43 near the center of the small business area. Other establishments include a post office, furniture store, bank and fire department.

Industrial Land Use

Industrial land use is dispersed throughout the urbanized areas of the county, although Rocky Mount and its surrounding area is the location for the majority of the industries. Approximately 95 industries are located in Nash County. Products vary from agricultural commodities to the manufacture of mobile homes.

In Nash County, the majority of the industries are located within the general vicinity of a municipality or a concentration of population because the different municipalities have serviced the industry with public water and sewer. However, the same majority of industries are not located within the taxable limits of a municipality. Spring Hope is an excellent example. At least three of its industries are outside the corporate limits. Most industries locate outside corporate limits to avoid municipal taxes or because industrial land might not be available within the municipality.

The above factors are evident in the location of industries in Nash County. Few, if any, are located totally within the rural areas of Nash.

Cultural, Recreational and Governmental Land Use

Cultural land use includes schools, colleges, churches,

museums and art galleries. Museums and art galleries are found only in Rocky Mount, but schools and churches are scattered throughout the county.

Nash County presently has two consolidated high schools, Northern Nash and Nash Central. Construction is underway on a third consolidated high school, Southern Nash, south of Stanhope. These schools house grades 9-12. Schools for grades 1-8 are scattered throughout the county, but they are gradually being consolidated. Schools vacated as a result of high school consolidation are now housing some of the lower grades.

Several vacant school buildings are located in the rural areas and are slowly deteriorating. Some of the inhabited schools which were built in the thirties are also deteriorating. Hopefully consolidation of the schools will help alleviate this problem.

Wesleyan College is located north of Rocky Mount on U. S. 301. This college is Methodist supported. Wesleyan College was chartered in June, 1956 and opened its doors in the fall of 1960. Enrollment in 1967 was 670. The college is expected to continue to grow and provide educational and cultural benefits to the area.

Nash County is in the process of establishing a technical institute. The Nash Technical Institute will be located in the former Benvenue High School and will offer courses similar to the several existing technical institutes across the State. The institute will furnish the needed skilled workers for many industrial jobs in the county at present and for the future industrial firms locating in the county.

Churches are numerous throughout the county. It is estimated that the membership ranking of the churches is

as follows: Baptist, Methodist, Presbyterian, Church of God and Catholic. The Freewill Baptists have an orphanage near Middlesex.

Recreational land use is practically nonexistent within the rural county areas. The recreation that does exist is in the form of Community Buildings but these are not used for recreation purposes. Rocky Mount, however, as a municipality has an excellent recreation program, which is used by many county residents.

The proposed Tar River Reservoir is the best hope at present for meeting future recreational needs in the county. The reservoir potentials will be discussed in a following chapter.

A quasi-public type recreation facility is found in the southern portion of the county. This is Camp Charles Boy Scout Camp. Although it is not open to the public at large, the scouts do use this area for training, camping and recreation purposes.

An additional recreation facility that does exist is the golf courses in Nash County. Three courses are located within the rural areas: one just outside the city limits of Nashville, the second golf course located across from Northern Nash School and the third directly north of Spring Hope.

Nash General Hospital, an $8.5 million dollar modern medical facility will be located west of Rocky Mount on approximately 145 acres of land. This hospital will provide a needed facility for the people of Nash County and will, in all probability, serve some of the residents of nearby counties.

The North Carolina State Highway Commission maintains a district office west of Nashville on U. S. 64. Nashville, being the county seat, is the location of the majority of the state and county offices in the county.

Transportation Land Use

Rail Transportation

Nash County's transportation history dates back to the industrial revolution and the building of a railroad in 1845 or 1846, which was 161 miles long, at that time the longest in the world. For decades, the railroad was known as the Atlantic Coast Line and today through a rail merger, it is known as the Seaboard Coast Line Railroad. This railroad "put Rocky Mount on the map". For many years the economy of the town was greatly dependent on the railroad.

Nash County is served today by two railroads, Seaboard Coast Line and Norfolk Southern. Seaboard Coast Line is the predominate railroad in the county and its north-south line represents the county line. Rocky Mount is the headquarters for the Seaboard in Nash County.

Seaboard's service area is six states: Virginia, North Carolina, South Carolina, Georgia, Florida and Alabama. At Rocky Mount, ten passenger departures are scheduled each day, five north bound and five south bound. Freight trains number eight per day with four running north to Portsmouth, Virginia and four running south to Florence, South Carolina.

Seaboard has one other rail line running from Bunn, N. C. in Franklin County through Spring Hope, Nashville, and connecting with the line in Rocky Mount. The Seaboard Coast Line Railroad is still one of the major employers in the county with some 950 employees.

The Norfolk Southern Railroad passes through a small portion of the southwest tip of the county. The rail routes follow U. S. 264 through Middlesex and Bailey, and is strictly a freight route.

Highways

Nash County is a crossroads for north-south and east-west travel. At Rocky Mount, U. S. 64 and U. S. 301

intersect. The construction of Interstate 95 will intersect U. S. 64 west of Rocky Mount in the very near future. U. S. 301, which bypasses Rocky Mount to the west carries a tremendous amount of tourist traffic. U. S. 64 is well known as the "mountains to the sea" route and also carries a tremendous volume of traffic. These two traffic arteries are the main traffic carriers in the county. U. S. 264 passes through the southwest tip of the county linking Middlesex and Bailey. Other notable major routes are N. C. 58, and N. C. 97, north-south, east-west routes respectively, N. C. 43 linking Rocky Mount and Warrenton and N. C. 48 linking Rocky Mount with Roanoke Rapids are the final major carriers of traffic in the county.

Secondary roads represent the largest road mileage with a total of 787 total miles. This is 80 percent of the total road mileage in the county (paved and unpaved). The majority of the paved secondary roads are in excellent condition and they afford the farmer direct access to local markets.

TABLE I

ROAD MILEAGE[2]

1967

	Primary	Secondary	Total*
Rural Paved	170	520	690
Rural Unpaved	---	245	245
Municipal Paved	28	21	49
Municipal Unpaved	---	1	1
Total Road Mileage	198	787	985

[2]N. C. State Highway Commission.

*Totals reflect only those roads which are a part of the state system and are maintained by the N. C. Highway Commission.

Total unpaved roads account for approximately 25 percent of the total road mileage with 246 miles. This figure is relatively high but many of the roads are in sparsely populated areas and do not meet criteria for paving set forth by the Highway Commission.

Truck Transportation

With the growth of industry in Nash County, (95 industries at present) transportation expanded to trucking, bus and air services.

Trucking terminals total eight in Rocky Mount and two additional truck lines serve the area but do not have terminals in the area. Motor freight is dispatched in all directions from Rocky Mount and Nash County. Nash County being centrally located on the east coast is an important factor in the location of the trucking industry in the area.

Bus Transportation

Rocky Mount is the center for transportation facilities in Nash County. Carolina Coach Company and Seashore Bus Company serve Rocky Mount. Carolina Coach dispatches from Rocky Mount to Richmond north and to Charlotte in the west. Seashore dispatches from Rocky Mount south to Beaufort. The bus terminal has approximately 50 departures per day with connections throughout the United States.

Air Transportation

Air transportation for the past 32 years has been represented by the Rocky Mount Municipal Airport. Construction is presently underway on the Rocky Mount-Wilson Airport. The runway of this new facility will be some 7,000 feet, and will accommodate the short range jet.

This new airport facility will not cause the closure of the Municipal Airport. One runway will remain open to industy and private air travel.

Piedmont Airlines presently serves the Rocky Mount Airport with daily commercial flights. In 1966, Piedmont boarded 9,585 passengers and it is estimated that more than 18,000 persons traveled through Rocky Mount Municipal Airport in 1966. This type facility affords the businessman and industrial prospects, convenience and direct access to their clients and plants. Connections can be made from Rocky Mount to Washington, Atlanta, Louisville, Columbus and many points between.

Forestry Land Use

Nash County's total land area is approximately 354,280 acres. Total commercial forests in 1964 was 180,000 acres, or slightly more than half the county area, with 179,900 acres in private ownership. It is estimated that the 180,000 acres of timberlands have a volume of 970,700,000 board feet of sawtimber and 3,490,000 cords of growing stock.[3]

Woodland is important for several reasons. It provides added income to the farmers of the county, provides erosion controls for the land and serves as a natural environment for the wildlife.

Several timber related industries are found in the county. Two sawmills are located in Battleboro and one is located at Nashville. Whitakers is the home of Goblet Veneers, Inc., which manufactures veneering and flooring. Other wood related products produced in the county are reels, hogshead materials and laminated beams.

Agricultural Land Use

Agriculture is the largest user of land in the county with 332,760 acres. Latest statistical figure from the Nash County Agricultural Department indicates the following breakdown of agricultural land uses.

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[3] North Carolina's Timber, U. S. Department of Agriculture, Forest Service, 1966, pps. 42-47.

TABLE 2

AGRICULTURAL LAND USE
1967

Land Use	Acreage
Row Crops	48,260
Corn	32,300
Small Grain	9,755
Pasture	17,813
Forest	171,500
Idle Land	33,200
Miscellaneous*	19,932
TOTAL	332,760

*Includes such products as home gardens and vegetable farms.

Source: Nash County Agricultural Extension Service.

The 1964 Census of Agriculture has set the total number of farms at 3,117 and the average size of farms at 83.6 acres. This same publication indicated that the total number of farms in 1959 totaled 4,014, thus the number of farms in 1964 was 22 percent less than in 1959. In 1959 the average size of farms was 69.1 acres, therefore the 1964 figure of 83.6 acres indicates a 20 percent increase. It can be assumed from these figures that the small and less successful farmer is moving or seeking employment elsewhere and the more successful farmer is acquiring more farmland.

Nevertheless, the shrinking number of farms has not decreased the income from farming. In 1967 it has been estimated that $35.5 million will represent the gross agricultural income placing it as the number one commodity in the county. It has also been estimated that the 1967 industrial income will be $30 million, placing industry a

close second.

Commercial Land Use

Commercial land use is abundant in Nash County. Within the rural areas, the general store has existed for many years. Bill Sharpe's A New Geography of North Carolina states that Nash County is probably one of the leading counties in the State in the number of general stores. These stores have been a way of rural life for many decades and the number of these stores lead one to believe that the true rural life still exists in Nash although industries and urban settlement are scattered throughout the county. A large number of people still rely on the general store for many of their everyday needs.

The center of commercial activity is Rocky Mount, with Tarrytown Mall playing an important role in convenience shopping for the county residents. The second and third largest shopping areas are Nashville and Spring Hope respectively. Bailey, Middlesex, Red Oak, Castalia, Battleboro and Whitakers all have fairly small shopping areas. The type of stores found in these small shopping centers are closely related to the daily needs of the people.

U. S. 301 represents the largest strip commercial area in the county. The development adjacent 301, north and south of Rocky Mount, grew because of the number of tourists traveling this main transportation route. Industry is also scattered through the commercial strip, but is generally located near municipalities on U. S. 301.

Factors Influencing Development

GEOGRAPHICAL LOCATION

Nash is a fair-sized county, with 354,280 acres, most of it gently rolling between 100 and 200 feet above sea level, suited for diversified agriculture, but still used mostly for row crops. It is well-farmed, but even so nearly half the acreage is still in woodlands. Nash is little more than half as big as our largest counties, three times larger than our smallest.[4]

Natural and man-made boundaries demarcate Nash from adjacent counties. The northern boundary is formed by Fishing Creek, the east by the Seaboard Coast Line Railroad. The southern boundary is formed by Johnston and Wilson while the western boundary is formed by Franklin and Wake counties.

Using Nashville as the center of the county, five (excluding Rocky Mount) fairly large urban centers are found within a 50 mile radius; Raleigh, Goldsboro, Wilson, Greenville, and Roanoke Rapids. The coast of North Carolina is approximately two hours driving time from Nash County.

Nash County also serves as a crossroads for east-west and north-south travel. Highway 64 and U. S. 301 intersect at Rocky Mount. Interstate 95, soon to be completed, will also intersect Highway 64. Therefore, Nash County is centrally located to excellent shopping centers, travel, recreation and sports activities.

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[4] A New Geography of North Carolina, Sharpe, Sharpe Publishing Company Inc., 1954, Volume 1, p. 282.

CLIMATE[5]

The climate of Nash County is influenced by its nearness to the Atlantic Ocean approximately 100 miles to the east and to the Appalachian Mountain Range approximately 150 miles to the west.

The average length of the freeze-free growing season in Nash County is about 210 days, from April to November. Summer weather in the county is warm, but the occurrence of extremely hot weather is rare. During the period of record, temperatures as high as 100°F. have been recorded in each of the months May through October. These occurrences are isolated instances, however, and whole summer seasons may pass without a single temperature as high as 100°F. During the three year period, 1960-62, no temperature above 96°F was recorded.

Although the highest single temperature of record took place in June, July averages being the hottest month of the year, followed by August, and then June. Even during these months the temperature usually drops off sharply at night, and at no time of the year does the average temperature exceed 70°F. at sunrise. On the other extreme, the coldest weather occurs in January, December and February, usually in that order.

The precipitation in Nash County is ample, and is usually very well distributed throughout the year. The heaviest amounts fall during the peak growing season months of June, July and August when the need for water by individuals and industries, as well as for agriculture, is greatest.

In winter as well as summer, most of the precipitation falls as rain. Although heavy falls of snow have occurred,

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[5]Albert V. Hardy, State Climatologist, N. C. State University.

the average amount is less than six inches per winter. Snow averages accumulating more than an inch on the ground only once per winter.

Prevailing winds in Nash County are from southerly directions in summer and northerly at other seasons of the year. In autumn, winds are most often from the northeast. The average surface wind speed is eight to nine miles per hour; winds most often reach their highest in the early afternoon, and drop off considerably during the night hours just before dawn.

The sun shines about sixty percent of the daylight hours in the Nash County area; summer is the sunniest season, with sunshine about two-thirds of the time between sunrise and sunset. In winter there is only about fifty percent sunshine. Autumn usually brings a great deal of fine outdoors weather, and is the season when a completely cloudless day is most likely.

GEOLOGY

The following description of the geological formation underlying Nash County was obtained from the N. C. Department of Conservation and Development, Division of Mineral Resources.

- The western half of the county from county line to county line, north and south, is predominately paleozoic metavolcanic rocks with middle to late paleozoic intrusive rocks.
- The eastern half contains predominately coastal plains overlap (miocene-yorktown formation) of sands and interbedded clays in contact with older paleozoic metavolcanic rocks and igneous intrusive rocks.

The above description would not be sufficient for an industrial prospect looking for a site with good solid subsoil qualities. It is customary before construction of large buildings for engineers to take bore samples to determine the quality of the foundation rock. This would also be true for highway construction.

Minerals

Nash County is not known for its excavation of minerals since very little of commercial value is known to exist here at present. According to Bill Sharpe's A New Geography of North Carolina, "Minerals (aside from sand and stone) are not now important, though $2,000,000 was taken out of the three gold mines of Nash, Warren and Franklin (notably the Portis mine) before they were exhausted; and iron was mined in colonial times."

Certain rock formations can normally produce an undetermined amount of minerals. In order to effectively evaluate the amount of minerals that can be extracted, extensive geological surveys must be made. The following are various formations found in Nash County with their possible

mineral qualities, although as previously mentioned, their quantity is not known.

- Felsive volcanics can produce material for light weight aggregate to be used in the production of concrete blocks and for road construction.
- Intrusive rocks can produce aggregate that can be used for highway construction. This is mined by quarry operations.
- Coastal Plains overlap can produce clays such as Kaolins that can be used in the ceramic industry for china and sanitary wares.
- Sands are available that can be used in paving operations and possibly some that can be used as a supplement in the manufacture of transit pipe and glass.

At present the only mineral resource extracted is crushed granite. Nello L. Teer Company located southwest of Rocky Mount on U. S. 301 extracts granite and crushes it for use in the construction of concrete roads. Vulcan Material Company also operates the same type facility near Whitakers.

Limitations on Development

The geological formations of Nash County will not impose any problems for residential, industrial, commercial or agricultural development. Open pit mining operations might deter development within the immediate vicinity. However, it is not thought that Nash County has the quantity of minerals available that would attract a large mining operation, other than quarrying for crushed aggregate, and it is thought that the quantity of granite in the county is not large. Nash County represents the nearest supply of granite to the east coast and will continue to supply crushed granite as long as the supply and demand is present.

SOILS

Soil types and their suitability and limitations for development are one of the most important factors for sound development, whether it be development in the city or in the rural area. It is not uncommon for a dwelling to be built without consideration being given to the fact that the soil might not adequately support a septic tank filter field. Soil that is not capable of handling septic tanks usually become polluted and discharges waste into the water supply.

Septic tanks are but one facility dependent on the soil conditions. Foundations for homes and industries, foundations for road construction, recreation areas and agricultural use are some of the developments that should know the soil conditions before sound development can take place.

Map 2 indicates the various soil associations as they are found in Nash County. A mere knowledge of the location of the different soils is not sufficient. The limitations or suitability for various developments must be known. Table 3 shows the different soil associations and their limitations and suitability for development.

Soils are classified by the U. S. Soil Conservation Service capability classes. Four classes are used to describe the soils of Nash County, however, eight classes exist but the remaining four are very small in percantage in Nash County. These are as follows:[6]

Class I. Very good land that can be cultivated safely with ordinary good farming methods. Usually little or no erosion. Nearly level and easily worked. May need some clearing, water management or fertilizing.

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[6]Land Capability Inventory Shows What Land Can Do, U. S. Department of Agriculture, SCS, January, 1950.

Class II. Good land that can be cultivated safely with easily applied conservation practices such as contouring, protective cover crops, simple water management, rotations and fertilizing. Moderate erosion common.

Class III. Moderately good land that can be cultivated safely with such intensive treatments as terracing and strip cropping, along with measures like crop rotation, cover crops, fertilizing, water management, etc. Usually subject to moderate to severe erosion.

Class IV. Fairly good land that is best suited to pasture and hay, but which can be cultivated occasionally - usually not more than one year in six. Careful erosion prevention practices must be used when it is cultivated.

In order that the reader might have a better understanding of Table 3, a brief description follows of the eight soil associations.[7]

Norfolk-Orangeburg-Chesterfield

This association consists chiefly of broad, smooth ridges on nearly level to sloping topography. Norfolk soil make up about 40 percent, Orangeburg about 35 percent and Chesterfield about 15 percent of the association. The rest of the association is made up chiefly of Wagram, Goldsboro and Lynchburg soils.

About three-fourths of this association is cultivated or in pasture, and the remainder in woods. Most of the land, about 75 percent, is in Class II, about 15 percent

[7] The description of the soil associations was prepared by the U. S. Department of Agriculture, Soil Conservation Service, Raleigh, N. C.

SOIL INTERPRETATIONS

TABLE 3

SOIL ASSOCIATIONS		% IN ASSOC.	LIMITATIONS FOR						
			DWELLINGS WITH		RECREATION		LIGHT INDUSTRIES (FOOTINGS IN SUBSOIL)	ROADS AND STREETS (SUBSOIL FOR BASE)	GENERAL AGRICULTURE
			SEWERAGE SYSTEMS	SEPTIC TANK FILLER FIELDS	CAMP SITES	PICNIC AREAS			
APPLING - DURHAM (5 % OF COUNTY) GENTLY SLOPING TO SLOPING, WELL DRAINED SOILS WITH COARSE SANDY LOAM SURFACES OVER FIRM CLAY TO FRIABLE SANDY CLAY LOAM SUBSOILS	APPLING	75							
	DURHAM	15							
GEORGEVILLE - HERNDON (6 % OF COUNTY) GENTLY SLOPING TO STEEP, WELL DRAINED SOILS WITH SILT LOAM TO SILTY CLAY LOAM SURFACES OVER FIRM SILTY CLAY OR CLAY SUBSOILS.	GEORGEVILLE	75							
	HERNDON	15							
WAGRAM - NORFOLK (6 % OF COUNTY) NEARLY LEVEL TO SLOPING, WELL DRAINED SOILS WITH SANDY SURFACES OVER FRIABLE SANDY CLAY LOAM SUBSOILS.	WAGRAM	70							
	NORFOLK	20							
GEORGEVILLE - CECIL BRADLEY (30 % OF COUNTY) GENTLY SLOPING TO STRONGLY SLOPING, WELL DRAINED SOILS WITH SILT LOAM TO SANDY LOAM SURFACES OVER FIRM SILTY CLAY TO CLAY SUBSOILS.	GEORGEVILLE	65							
	CECIL	15							
	BRADLEY	10							
NORFOLK - ORANGEBURG CHESTERFIELD (32 % OF COUNTY) NEARLY LEVEL TO SLOPING, WELL DRAINED SOILS WITH SANDY SURFACES OVER FIRM SANDY CLAY LOAM TO CLAY SUBSOILS	NORFOLK	40							
	ORANGEBURG	35							
	CHESTERFIELD	15							
NORFOLK - CRAVEN (1 % OF COUNTY) NEARLY LEVEL TO SLOPING, WELL TO MODERATELY WELL DRAINED SOILS WITH SANDY LOAM SURFACES OVER FRIABLE SANDY CLAY TO CLAY SUBSOILS.	NORFOLK	50							
	CRAVEN	40							
LYNCHBURG - RAINS NORFOLK (12 % OF COUNTY) NEARLY LEVEL TO GENTLY SLOPING, SOMEWHAT POOR, POORLY & WELL DRAINED SOILS WITH SANDY SURFACES OVER CLAY LOAM SURFACES.	LYNCHBURG	40	WT	WT, FL	WT	WT	WT		
	RAINS	30	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	
	NORFOLK	20							
BIBB - WEHADKEE ROANOKE (8 % OF COUNTY) NEARLY LEVEL, POORLY DRAINED SOILS ON FIRST BOTTOMS & LOW TERRACES, SUBJECT TO OVERFLOW	BIBB	70	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	
	WEHADKEE	20	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	
	ROANOKE	10	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	WT, FL	

LIMITING FACTORS

WT WATER TABLE

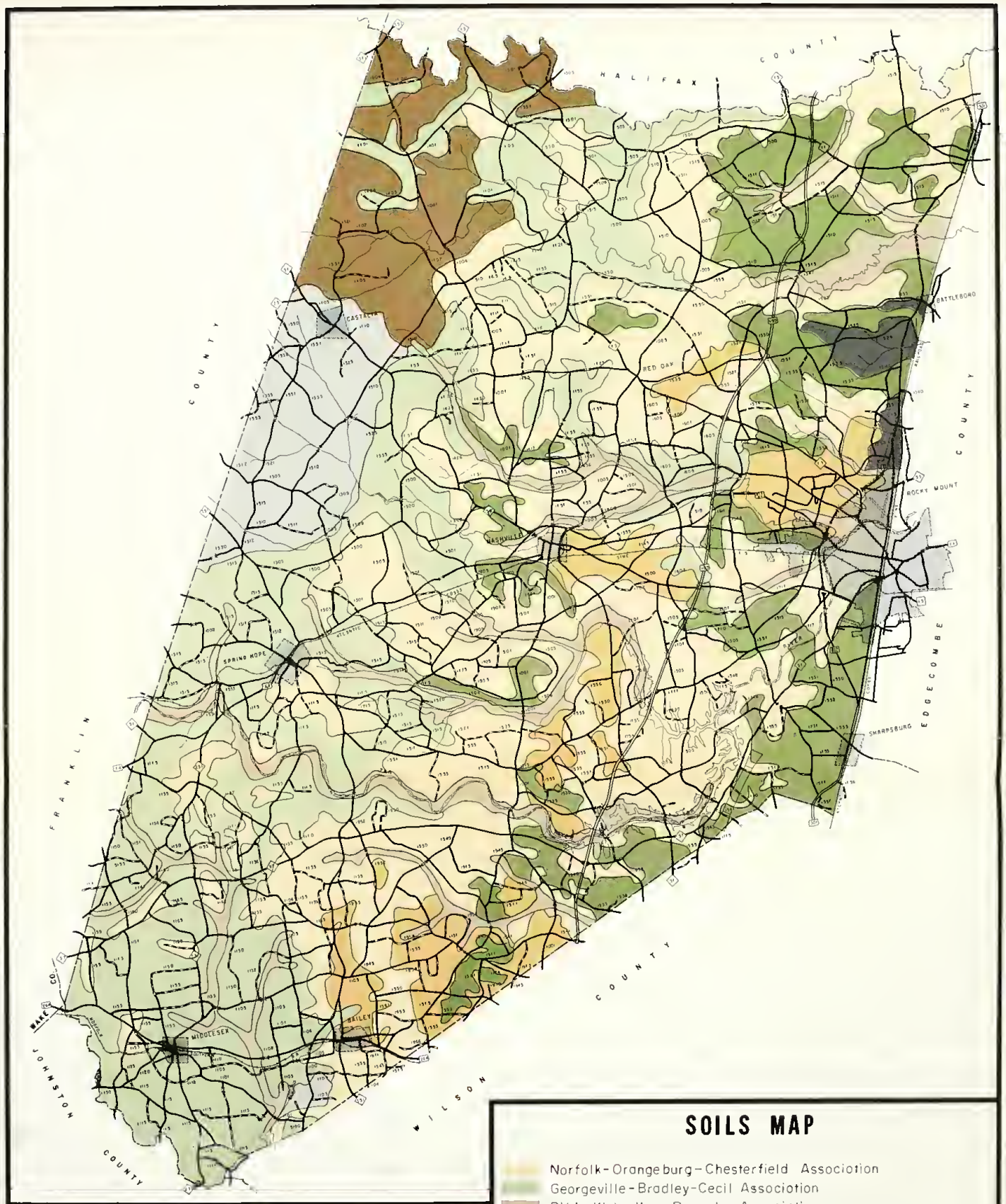
FL FLOOD HAZARD

DEGREES OF LIMITATIONS

SLIGHT

MODERATE

SEVERE



NASH COUNTY

NORTH CAROLINA

SCALE IN MILES 0 1 2 3

SOILS MAP

- Norfolk-Orangeburg-Chesterfield Association
- Georgeville-Bradley-Cecil Association
- Bibb-Wehadkee-Roanoke Association
- Appling-Durham Association
- Wagram-Norfolk Association
- Lynchburg-Roins-Norfolk Association
- Georgeville-Herndon Association
- Norfolk-Croven Association

MAP 2

in Class III and the remainder divided between Classes I and IV. The soils in this association are among the best in the county for general farming and also non-farm uses. They are well suited for all crops grown locally, and are easily tilled and respond well to lime and fertilizer. They are susceptible to erosion and conservation practices should be used to effectively control this hazard.

The major soils in this association have only slight to moderate limitations for septic tank absorption fields, foundation footings for buildings and for road construction.

Georgeville-Bradley-Cecil

This association consists chiefly of fairly broad ridges of moderate slopes that break rather sharply to the drainageways. The soils are well drained. It makes up about 30 percent of the county and occurs in the Piedmont section which is mostly in the western part of the county from north to south. Georgeville soils make up about 65 percent, Bradley about 15 percent and Cecil about 10 percent of the association. The remainder of the association consists chiefly of Orange and Herndon soils and wet soils near streams.

About half of this association is in cultivation or pasture and the remainder is in woods. About 40 percent of the association is in Land Capability Class II, 40 percent in Class III, 10 percent in Class IV and 10 percent in other classes. The crops grown in this association are commonly corn, small grain, lespedeza, tobacco and pasture. Erosion is the major hazard which can be severe.

The major soils in this association have moderate limitations for septic fields, foundations for buildings and road construction.

Bibb-Wehandkee-Roanoke

This association occurs on flat, wet areas adjacent

to or near streams and the soils are poorly drained. It makes up about 8 percent of the county. The largest areas occur along Tar River, Toisnot Swamp, Turkey Creek, Stony Creek, Sapony Creek, Pig Basket Swamp and Swift Creek.

Bibb soils make up 60 percent, Wehadkee 20 percent and Roanoke 10 percent of the association. The remainder of the association consists of Congaree, Chewada, Augusta and Altavista soils.

Over three-fourths of this association is in woods, with the remainder chiefly in pasture. Very little is in cultivation due to severe problems of wetness, overflow, and difficulty of obtaining suitable drainage outlets. Most of the association is in Land Capability Class IV.

The soils in this association have severe limitations for septic fields and other urban uses due chiefly to high water table and flooding.

Appling-Durham

This association consists chiefly of very broad, smooth ridges on gentle to moderate slopes with well drained soils. It makes up about 5 percent of the county, and practically all of the association is located in the western part of the county, beginning in the vicinity of Castalia and extending southward to the vicinity of Peachtree Church.

Appling soils make up about 75 percent and Durham about 15 percent of the association. The remainder of this association is made up chiefly of Vance, Cecil, Louisburg and wet soils near small streams.

About three-fourths of this association is cultivated or in pasture and the remainder is in woods. Most of the area, about 75 percent, is in Land Capability Class II, about 15 percent in Class III, and the remaining 10 percent in other classes. The soils in this association are used for the production of tobacco, corn, cotton, soybeans, lespedeza, small grain and pasture. They are especially

well suited for tobacco. They are easily tilled and respond well to lime and fertilizer. Erosion is the major hazard. The coarse sandy loam surface texture is inducive to leaching which tends to keep the fertility of these soils low.

The soils have only moderate to slight limitations for other uses such as septic fields, foundations for building, road construction and recreation.

Wagram-Norfolk

This association consists of very broad, nearly level to gently sloping ridges, breaking mildly to the drainageways. The soils in this association are well drained. This association makes up about 6 percent of the county. The association is somewhat scattered throughout the Coastal Plain section of the county.

Wagram soils make up about 70 percent and Norfolk about 20 percent of the association. The remainder is made up chiefly of Lynchburg-Rains, Troup and wet soils near small streams.

About three-fourths of this association is cultivated or in pasture, with the remainder in woods. Most of the land, about 75 percent is in Class III, and the remainder divided between Class I and IV.

The soils in the association are suited for the production of tobacco, corn, cotton, peanuts, lespedeza, small grain and pasture. They are especially well suited for tobacco. They respond well to conservation practices. The Wagram soils, having thicker sandier surfaces, are not as fertile as the Norfolk soils and require more fertilizing for good yields.

The soils in this association have slight limitations for septic tank fields, foundations for buildings and road construction.

Lynchburg-Rains-Norfolk

This association is nearly level to gently sloping with somewhat poorly, poorly drained and well drained soils. It makes up about 12 percent of the county. The largest areas occur from Gold Rock to Pittman's Store, and south of Rocky Mount along the county line.

Lynchburg soils make up about 40 percent, Rains about 30 percent and Norfolk about 20 percent of the association. The remainder of this association is made up chiefly of Coxville, Dunbar and Goldsboro soils.

About three-fourths of this association is cultivated or in pasture and the remainder is in forest. About 50 percent of the land is in Land Capability Class II, about 30 percent in Class III and the remainder in Class I. This association tends to be poorly drained, but by the use of open ditch and tile drainage, a large percent of the area is being cultivated and produces good yields of adopted crops such as corn and beans.

The major soils (Lynchburg) have severe limitations for septic fields and moderate limitations for most other non-farm uses. Rains soils have severe limitations for all urban uses, while Norfolk soils have only slight limitations.

Georgeville-Herndon

This association consists chiefly of fairly narrow ridges of moderate slopes that break rather sharply to the drainageways. This association has well drained soils. It makes up about six percent of the county and occurs in the northwestern part of the county. The soils in this association are similar to the Georgeville-Bradley-Cecil association, but the average slope is much steeper and the percentage of area in forest is much higher.

Georgeville makes up about 75 percent and Herndon makes up about 15 percent of the association. The remainder

of the association is made up chiefly of Cecil, Orange and Appling soils.

Only about one-tenth of this association is in cultivation or pasture and the remainder is in woods. About 40 percent of the association is in Land Capability Class III, 40 percent in Class IV and the remainder about equally divided between Classes II, VI and VII. The soils in this association are fair for corn, small grain, lespedeza, tobacco and pasture, but because of the topography, only a small percent of the area is used for cultivatable crops.

The major soils in this association have moderate limitations for septic fields, foundations for buildings and road construction. The steep slopes in this association will have severe limitations for most uses.

Norfolk-Craven

This association consists chiefly of narrow ridges of moderate slopes that break rather sharply to the drainageways and the soils are well to moderately well drained. It makes up about one percent of the county. This association occurs in three small areas from Battleboro to Rocky Mount.

Norfolk soils make up about 50 percent and Craven about 40 percent of the association. The remainder of the association is made up chiefly of Dunbar, Lynchburg and Coxville soils.

About three-fourths of this association is cultivated or in pasture, and the remainder in woods. About 70 percent is in Class II, about 20 percent is in Class III and the remainder in Classes I and IV. The soils in this association are well to fairly well suited for locally grown crops. The Craven soils in this association are very susceptible to erosion and adequate conservation practices should be used to effectively control this hazard.

The Norfolk soils in this association have slight limitations for urban uses, such as septic tank absorption fields, foundations for buildings and roads. Craven soil has severe limitations for septic tank absorption, fields and roads, and moderate limitations for foundations for buildings.

It can be seen by the previous descriptions that the different soils impose different capabilities and limitations on the various developments of the county. Therefore, each potential development will be discussed as to its capability or limitation for development.

SOIL LIMITATIONS

Residential

Soil limitations that would hinder residential development are scattered throughout the entire county. Table and the soil descriptions have shown that Chesterfield, Georgeville, and Appling soils (32.5 of the county total) have moderate limitations for residential development with septic tank filter fields. Soils with severe limitations are Bibb, Rains, Lynchburg and Craven (14.4% of the county total). Moderate limitations does not mean that residential development cannot exist, but rather it means that residential development should occur at a very low density. Subdivision development would not be recommended unless the lots were large enough to support septic tank filter fields. Lots of a minimum size of one to two acres would not, in most instances, impose hazards for residential development. With public sewerage systems, few limitations exist in the county. Lynchburg soils impose only moderate limitations to development with public systems while Bibb, Rains, and Craven impose severe limitations.

Industrial, Commercial and Transportation

Soil characteristics for industrial, commercial and transportation development are all directly related to one another. Foundations for the above developments are found in the subsoils, therefore, high water tables and flood hazards would be the limiting factors for development. Soils imposing water problems are Bibb, Wehadkee, Roanoke, Lynchburg, and Rains, but the total area made up of these soils is only about 17 percent of the county total, which does not really impose a problem to location, because the larger portion of the 17 percent is located adjacent creeks and in swampy areas.

Recreation

Soils adaptable for recreational purposes are numerous in the county although certain recreational activities must be withheld from certain type soils. Erosion, steep topography and high water tables or flooding hazards represent the limitations. In general, all the soils in Nash County have some of the previously mentioned limitations. It is not feasible to build a recreation center in a floodplain but this floodplain could be used very effectively for picnicking and open playfields. Erosion prone soils should not be used for ballfields or for sports where large cleared areas are needed but these soils covered by natural vegetation could be used for camping purposes. Therefore, it should be noted that practically all type soils could be used for certain recreational facilities.

Agricultural and Forestry

Few limitations are noted for agricultural or forestry development. Bibb-Wehadkee-Roanoke soils do present limitations to the agricultural development due to the fact that these soils are very wet, poorly drained and susceptible to flooding. There are no limitations noted to hinder forestry development in any of the soil associations.

The major limiting factor in the development of agricultural use is that a number of the soils in the county are susceptible to erosion. It should be noted that through effective erosion and conservation practices this problem can effectively be controlled.

Ground Water

"The principal source of ground water in this area is from precipitation as rain or snow. The average yearly precipitation is about 45½ inches. Stream flow carries off about one-third of this as direct runoff, another one-third is lost by evaporation and by transpiration through vegetation before reaching the water table, and the remaining one-third reaches the water table, so that recharge to ground water from precipitation is roughly about 15 inches per year. Although the ground water level fluctuates considerably, the amount of water held in storage changes very little when considered for a period of years so that average annual recharge to the ground water is approximately equalled by the average annual discharge of ground water. Ground water is discharged through springs, seeps and wells, and by evaporation and transpiration. Most of the water discharged by the springs and seeps enters the streams and maintains their flow during periods of no rainfall.

A large quantity of water occurs below the surface in the openings or interstices in the rocks. The interstices range in size from the minute pores in clays to large tunnels and caverns in lavas and limestone.

There are a considerable number of drilled wells in the county, although most of the domestic wells are dug, bored or driven. Most of the shallow domestic wells yield water from the terrace formation or from decayed and disintegrated rock in the upper part of the crystalline bedrock. Most drilled wells obtain their supplies from the crystalline rocks, with a few wells obtaining supplies from the Yorktown formation. Wells in the western two-thirds of Nash County yield moderate supplies while wells drilled in the granite belt in the eastern third of the

county show considerable variation in yield. Yields from 0 to 45 gallons a minute are reported. It appears that wells drilled in the granite along the western margin of the granite belt are considerably better than wells drilled farther from the contact of the two formations. The average yield of five wells in the granite near the contact is about 16 gallons per minute while the average yield of 18 wells, two or more miles from the contact, is about 9 gallons a minute."[8]

All municipal water systems in the county with the exception of Rocky Mount, obtain their supplies from ground water sources. The following is a listing of the municipal water supplies and their service capacity.[9]

Bailey (Population 795)

Ownership: Municipal. Total population supplied, about 500.

Source: Two wells (Nos. 1,2). The yields are reported to be 80 and 30 gpm.

Treatment: Addition of Calgon for corrosion control, and chlorination.

Finished water storage: 1 elevated tank, 100,000 gallons.

	Well 1	Well 2
Depth (feet)	250	155
Diameter (inches)	6	8
Date Drilled	1923	1953

[8] Ground Water In the Halifax Area, North Carolina, M. J. Mundorf, 1946, N. C. Department of Conservation and Development, pps. 9, 48.

[9] Chemical and Physical Character of Municipal Water Supplies in North Carolina, Bulletin 2, Supplement 3, 1965, N. C. Department of Water Resources, pps. 5, 27, 30, 40, 46.

Battleboro (Population 364)

Ownership: Municipal; also supplies suburban districts. Total population supplied, about 400.

Source: 1 well (No. 2). The yield is reported to be 100 gpm.

Auxiliary supply: 1 well (No. 1). The yield is reported to be 32 gpm.

Treatment: None.

Raw water storage: 1 elevated tank 75,000 gallons.

	Well 2	Well 1 (Auxiliary)
Depth (feet)	440	280
Diameter (inches)	6	6
Date Drilled	1962	1941
Percent of Supply	100	---

Middlesex (Population 588)

Ownership: Municipal. Total population supplied, about 471.

Source: Two wells (Nos. 1,2). The yields are reported as 150 and 70 gpm.

Treatment: Well 1: Chlorination, addition of Calgon for corrosion control.

Finished water storage: 1 elevated tank, 30,000 gallons.

	Well 1	Well 2
Depth (feet)	105	86
Diameter (inches)	8	6
Date Drilled	1907	1907
Percent of Supply	50	50

Nashville (Population 1423)

Ownership: Municipal. Also supplies suburban districts. Total population supplied, about 1,825.

Source: Three wells (Nos. 1,2,4). The yields are reported to be 50, 250 and 250 gpm.

Treatment: None.

Raw water storage: 1 elevated tank, 60,000 gallons; 1 reservoir, 110,000 gallons.

	Well 1	Well 2	Well 4
Depth (feet)	300	250	305
Diameter (inches)	8	8	6
Date Drilled	1915	1934	1934

Spring Hope (Population 1,336)

Ownership: Municipal. Total population supplied, about 1,553.

Source: Four wells (Nos. 1-4). The yields are reported to be 120, 75, 35 and 132 gpm.

Treatment: None.

Raw water storage: 2 elevated tanks, 100,000 and 200,000 gallons.

	Well 1	Well 2	Well 3	Well 4
Depth (feet)	600	187	505	305
Diameter (inches)	8	6	6	8
Date Drilled	1920	1918	1948	1963
Percent of Supply	---	---	---	66

Whitakers (Population 1,004)

Ownership: Municipal. Total population supplied, about 1,004.

Source: One well. The yield is reported to be 270 gpm.

Treatment: None.

Raw water storage: 1 elevated tank, 75,000 gallons.

	Well 1
Depth (feet)	230
Diameter (inches)	6
Date Drilled	1956
Percent of Supply	100

Ground Water and Development Potential

In 1960, the latest year for which published figures are available, ground water sources furnished 30 million gallons per day (MGD) for public water systems, 100 MGD for rural use, 35 MGD for industrial use, and 5 MGD for irrigation in North Carolina. This is less than 5 percent of our total usage even though ground water supplies are far greater in total than surface water.[10]

The same is probably true for Nash County. The quantity of water available in ground water supplies is sufficient for residential, commercial or industrial development. However, industrial development needing more than 200,000 gallons per day should be studied thoroughly before developing. It is not likely that a well could supply this type industry. It is recommended that at such time as an industry locates and uses ground water as its supply, that two wells be drilled. The second well would be used for peak flow periods to help eliminate the strain placed on one well. It is also recommended that the wells be cleaned at least once per year.

Another limitation to ground water is the quality (chemical and physical specifications) of water. In 1946

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[10]Harry Peek, Division of Ground Water, N. C. Department of Water and Air Resources.

the U. S. Public Health Service established chemical and physical specifications for drinking water and the American Water Works Association and most municipalities also adopted these specifications. These are as follows:[11]

"Iron and Manganese together --	no greater than	0.3 ppm*
Mangnesium	no greater than	125.0 ppm
Chloride	no greater than	250.0 ppm
Sulfate	no greater than	250.0 ppm
Fluoride	no greater than	1.5 ppm
Lead	no greater than	.1 ppm
Color	no greater than	20.0 ppm
Total solids	no greater than	500.0 ppm**

*Parts per million.
**1,000 ppm permitted if other water is not available.

Water containing less than 1,000 ppm of dissolved solids generally is satisfactory for most domestic and industrial uses. However, excessive iron content or hardness may cause difficulty in some uses. Waters containing more than 1,000 ppm of dissolved solids are likely to include certain constituents that make them unsuitable for domestic or industrial uses.

Information on hardness of water is of great importance. In domestic use hardness is recognized by the difficulty in obtaining a lather without an excessive consumption of soap; the insoluable, sticky curd that results in washing processes using soap, and the scale formed in vessels in which the water is boiled. Industry gives much attention to hardness in water supplies because it affects

[11] N. C. Department of Water Resources.

manufacturing processes and the finished product. Furthermore, the scale deposits in hot water pipes, hot water heaters, and steam boilers results in economic loss through loss of heat transfer, increased fuel consumption, and breakdown of equipment. Calcium and magnesium are the principal causes of hardness. Other constituents such as iron, manganese, aluminum, sodium, strontium, and free acid also cause hardness but generally they are not present in sufficient quantities, to have an appreciable effect on the hardness. Water having a hardness of less than 60 ppm is usually rated as soft and is suitable for most purposes. Hardness ranging between 60 and 120 ppm may be considered moderate, but it does not seriously interfere with the use of water except in high pressure steam boilers and in some industrial processes. Water having a hardness ranging from 121 to 200 ppm is hard, and laundries and some industries may profitably soften the supply. Water having a hardness greater than 200 ppm is usually softened before being used.

Iron and manganese in excess of 0.3 ppm are objectionable for several reasons. Excessive amounts of iron and manganese cause reddish-brown stains on white porcelain or enamelware, on fixtures, and on clothing or other fabrics. These two constituents in excessive amounts, interfere with dyeing, tanning, paper manufacturing, and the manufacture of photographic film and many other products.

Color, in water analysis, refers to the appearance of water that is free of suspended material. Generally waters are colored by organic matter leached from plants, tree roots, and organic components of soils. Highly colored water may foam in boilers and can stain processed products. It is more difficult to remove iron and to soften the water with hot phosphate solutions in highly colored waters than in clear water. Also, color is objectionable in public water supplies for esthetic reasons."

The limitations that exists in Nash County is that excess iron is found in the majority of the wells and some of the waters tend to be hard. Actually these limitations are severe in many cases, but treatment can usually be applied at an economical cost.

In Nash County as previously stated, industrial supplies can be found in the ground water but they are limited to less than 200,000 gallon per day, and municipalities will normally furnish water to the industry if it is located within a feasible distance. Therefore, water supplies present no major problems to industry. Ground water is available for residential uses in all areas of the county. All water users can normally obtain an adequate amount of water although the depth of a well may vary from 100 to 600 feet.

Surface Water

Nash County's surface water is represented by the Tar River and several creeks that eventually flow into the Tar. Pollution of our rivers and streams has made the public usage of these waters less popular today. State and Federal laws regulating pollution are presently trying to cope with the problem. Other factors limiting the use of surface water are the rising cost in the treatment of surface water and periodic drought which reduces surface stream flow.

Surface Water Polluters

Surface water is more apt to become polluted than ground water. Many municipalities, industries and various commercial operations can easily pollute a river or stream by dumping waste into it. North Carolina law requires all water polluters to make application for a temporary permit to continue dumping waste into streams

and sets up a time table for the conversion to treatment of waste.

The following municipalities dispense treated waste into nearby streams.

- Spring Hope - Discharges its waste from its secondary type waste facility into Hendricks Creek, a tributary to Saphony Creek. No pollution.
- Nashville - Discharges its waste from its secondary type waste facility into Stony Creek. No pollution.
- Middlesex - Has a primary type sewage facility that is inadequate and presents a pollution problem.
- Bailey - Has a secondary type facility and does not present a pollution problem.
- Rocky Mount - Has recently completed an addition to its system. There is no problem with pollution from this system which discharges its waste into the Tar River.
- Battleboro - Has a primary type facility and discharges its waste into White Oak Swamp. Presently, the system is inadequate but a federal grant has been obtained to update the system.
- Whitakers - Has a secondary type sewage system. Presently, the system is being renovated so that pollution will not be a problem.

Only one municipality in Nash County presently obtains its water supply from surface waters. Rocky Mount, it is estimated, presently withdraws 8.5 million gallons of water per day from the Tar River. Rivers and streams are classified by the State Stream Sanitation Committee.

The classifications are based upon existing or contemplated best usage of the various waters and segments of the waters in the basin as determined through studies made and public hearings held within the area.

The following is a brief explanation of the classifications given to fresh waters by the State Stream Sanitation Committee.

Class A-I - Suitable as a source of water supply for drinking, culinary, or food processing purposes after treatment by approved disinfection only, and any other usage requiring waters of lower quality.

Class A-II - Suitable as a source of water supply for drinking, culinary, or food processing purposes after approved treatment equal to coagulation, sedimentation, filtration, and disinfection, etc., and other usage requiring waters of lower quality.

Class B - Suitable for outdoor bathing and any other usage requiring waters of lower quality.

Class C - Suitable for fishing and fish propagation, and any other usage requiring waters of lower quality.

Class D - Suitable for agriculture and for industrial cooling and process water after treatment by the user as may be required under each particular circumstance.

The proposed Tar River Reservoir will provide Rocky Mount with a quantity of water that could supply a population equivalent of approximately 250,000. All streams, branches and water channels in the general vicinity of the reservoir area have been reclassified to A-II. Water

usage on the portion of Saphony Creek that lies within the reservoir area and that portion of the Tar from the mouth of Saphony Creek to the dam will be restricted to fishing. The remaining portion of the reservoir will also be restricted, but additional water activities will be allowed.

Surface Water Potential

The only body of water at present that could and does furnish water for municipal purposes is the Tar River. Not only is this body of water a source of municipal water but the proposed reservoir has almost unlimited potentials.

The reservoir will surely encourage residential growth within the general vicinity. It is thought that the area from Rocky Mount to the dam area will experience immediate growth. The reservoir could furnish the county with tremendous recreational potentials. It can conceivably be anticipated that picnic grounds, boating facilities, swimming areas, camping grounds, golf course and marina facilities along with residential development will locate around the reservoir. Although the waters from the reservoir will furnish Rocky Mount, these facilities can be placed in such a manner that they will not pollute the reservoir.

Commercial and industrial areas are anticipated for the western end of the reservoir. With the location of Interstate 95, motel and industrial sites are possible. However, industrial prospects that discharge waste of pollution potential should not and will not be allowed in these areas.

TRANSPORTATION

Several modes of transportation presently exist in Nash County. These are rail, truck, bus, and air. As previously stated, the major transportation center in Nash is Rocky Mount. Not only is Nash County a crossroads for travel within the State but it is centrally located on the east coast for interstate travel.

With the presence of the several modes of transportation in Nash County, the growth of industry dependent on efficient transportation should flourish. Industry in turn will enhance the growth of residential development. From this, new businesses will develop to serve the people and the general economy will flourish. Nash is fortunate that it has the type of roads, rail, trucking and air facilities, either built or in the process of construction, that will influence growth for the entire county.

Rail freight is becoming more economical today due to bulk rates and "piggy back" service. The Seaboard has "piggy back" services in the Nash County area. The close location of the railroad east of U. S. 301, has prompted the location of several industries in the past and it is anticipated that these areas adjacent the railroad and U. S. 301 and the building of Interstate 95 will prompt more development of industry in Nash County.

Nash County is fortunate in another aspect pertaining to transportation. Being the crossroad of north-south, east-west travel, the tourist trade also influences the economy of the area. Some 864 motel and hotel rooms are available for the traveling public. The potentials for additional tourist related facilities is anticipated to be excellent, due to the fact that Interstate 95 will be the major north-south route for the eastern section of the United States, linking Maine with Florida.

PUBLIC UTILITIES

Electric Power

In today's modern era, it is fairly uncommon to find inhabited areas that are not served by electricity. In Nash County the entire county is served with electricity.

Carolina Power and Light Company serves approximately 70 percent of the county, however, Rocky Mount purchases its power at wholesale rates and redistributes the power within the municipality and a portion of the county south of the city. Virginia Electric and Power Company serves the remaining thirty percent, located in the northeastern sector of the county. Electrical power is readily available to any type development in the county.

Telephone

Telephone service for the county in its entirety is provided by Carolina Telephone Company. The majority of the county is served except for a few remote areas.

Requests for telephone service are carried out as soon as possible. The cost for installation is the responsibility of the telephone company although, if an individual is located in a remote area off the main line, the cost is shared by the telephone company and the person involved.

Carolina Telephone is installing all lines underground. This not only cuts down on damage caused by natural occurrences and man-made occurrences (poles damaged by automobiles) but it does not mar the landscape with unsightly poles and lines.

Future plans for the telephone company include complete service for the county.

Natural Gas

Natural gas is limited to the Rocky Mount area in Nash

County. This system is owned by the city and serves Rocky Mount and the industrial complex to the north of the city. Expansion of the facility will be at such time as it is economically feasible.

FORESTRY

In North Carolina approximately 20 million acres are classified as commercial forest land. In Nash County approximately 180,000 acres or 50.9 percent of the total land area is in forest land. This represents some 970,700,000 board feet of sawtimber and 3,490,000 cords of growing stock.[12]

Nash County's forest potential is practically unlimited. Forestry is directly related to agriculture, as an additional income factor and to the sawmill and wood related industries.

Forestry is not a tremendously important product in the county at present. In 1963, the cut of growing stock and sawtimber was 8.4 million cubic feet and 24.9 million board feet respectively. The actual cut of growing stock was approximately 65,600 cords as opposed to the 3,490,000 cords that is estimated to be growing in the county. Net annual growth of growing stock for all species was 9.3 million cubic feet and for all species of sawtimber 29.1 million board feet.[13] Therefore, the amount of cut timber does not surpass the annual growth of timber.

In order that a farmer can make an income off of his timber, he must exercise sound management practices. The most important rule is to establish a fully stocked stand of desirable trees on the land.

The following was extracted from an article by Don Glissom, Nash Soil Service, entitled Desirable Timber Can Mean Additional Income to Farmers.

> "The annual income from woodland in Nash County ranges from less than $1.00 per acre to a high of approximately $40.00 per acre. Cutover woodland, growing hardwood

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[12] North Carolina Timber, U. S. Department of Agriculture, 1966, p. 45.

[13] Ibid., p. 46, 47.

brush will produce about one-half cord of pulpwood annually which is worth about $2.00 per cord stumpage. Most of the hardwoods that come back after timber is cut do not grow into desirable hardwood timber. A fully stocked and well managed stand of loblolly pine ranging from 10-15 inches in diameter will produce over 1,000 board feet of timber annually on most of the soils in Nash County. Timber now sells for approximately $40.00 per 1,000 board feet stumpage price.

On most of the soils in Nash County, loblolly pine is the most desirable tree to grow. Exceptions are low wet areas where hardwoods may be more desirable. Planted stands of loblolly pine will produce approximately two cords of pulpwood annually during the time it is growing into timber. At the current stumpage price of $6.00 per cord, this gives an annual return of $12.00 per acre. This is a greater return than many Nash County landowners are now getting for cash rent on cropland and pastureland."

It can be seen by the above that the farm owners in Nash County can expand their farm income. However, certain management factors are involved that the farmer must undertake to make a profit.

One additional potential exists as an added income to the farmer with idle forestland. This is rural recreation. The recreation facility could vary from a fish pond to several hundred acres incorporating various recreational facilities.

It is anticipated that the recreation potential in rural Nash County will increase due to the construction of the Tar River Reservoir. The area around the reservoir will have the greater potential for recreation. Property owners adjacent to the reservoir may choose to develop recreational related uses on their property.

In the remaining areas of the county possible recreational developments for farmers would be hunting and fishing reserves open to the public or leased for club operations.

It should be emphasized that the farmer or farmers anticipating the development of recreational facilities should investigate thoroughly the feasibility of a facility. The North Carolina Recreation Commission will assist interested landowners in developing the most feasible facility.

WILDLIFE

In Nash County, wildlife is abundant in the form of small game; rabbit, quail, dove, and squirrel. Larger game, such as bear and deer, are not normally found in the county. Although reports have indicated that deer have been seen occasionally.

The potential in the county lies in the large amount of woodland. In an interview with Rod Amundson of the North Carolina Wildlife Resources Commission, the potential for deer herds was discussed. He is of the opinion that deer herds could be established in the county, however, protective measures would have to be taken (especially from dogs) to successfully establish such a herd.

Hunting and fishing is gaining popularity throughout the United States. This is readily evidenced by the numerous hunting reserves established throughout the country. In Nash, one Wildlife Club exists at present. This club is located north of Castalia and covers a rather large expanse of land. Presently only fishing is available to club members.

Additional developments of this type could be forecast for other areas in the county. Again, good management practices must be established in order to successfully preserve the wildlife potential.

The National Wildlife Federation has cited four ways to produce more wildlife.

"- One approach is to make every bit of land still available for wildlife more productive, and to make land and water used primarily for other purposes produce as much wildlife as possible without conflict with the main problems.

- A second approach is to find substitute plants that will furnish good wildlife food and cover while they perform a useful farm function.

- A third approach is to investigate the possibilities, where we cannot keep or restore native habitat for native wildlife, or finding new kinds of wildlife that thrive in the new kind of habitat.
- The fourth approach is in "reverse": along with these things to do, to produce more wildlife, there are things we can justifiably stop doing, to preserve present wildlife. These are things like unwise drainage, pollution or excesses that are not only harmful to wildlife, but also economically unsound.

There are two ways the farmer can add income through good wildlife conservation practices. The first is the more economical with respect to the capital outlay of the farmer.

The farmer can enhance the present wildlife on his farm. This can be accomplished by furnishing good protective cover and food for the natural wildlife on the farm. His income could be supplemented by charging a nominal fee to hunters who would gladly pay to be insured that game exists within the area.

The second would be more expensive. This type facility would be the hunting preserve. The farmer would have each field marked and would import pen raised game to supplement the game in the area. A quail hunting preserve would be an excellent example of this. Normally hunters are furnished dogs, along with the absolute assurance that game does exist. This type facility would have extended hunting seasons, possibly into March.

In either of the above examples, a profit could be made. The first is by far the safer of the two on a capital outlay basis but it might not attract a great number of hunters. The second is not only more expensive, but there might also not be enough hunters in the general area to warrant this type expense.

It can be seen that each has general drawbacks, therefore, it is recommended that the farmer contemplating a hunting or fishing type facility, seek advise from professionally trained persons before beginning development. The North Carolina Wildlife Resources Commission could be very helpful in this respect.

Development Potentials

DEVELOPMENT POTENTIALS

This chapter will endeavor to pull together all the factors influencing development in Nash County. The developments that will be discussed are residential, industrial, commercial, agricultural and recreational.

Residential

Residential construction should prosper in the immediate fringe areas of several of the municipalities in Nash County due to several reasons. The majority of the soils in the county are adequate for septic tank filter fields. It should be noted that the existence of septic tank supporting soil is not a definite assurance that the tank will function properly. An additional factor must be present--correct installation.

Another important factor influencing development in residential construction is the number of industries locating in Nash County. It has been estimated that 100 factory workers bring an additional 359 persons and 100 more households to a town or community.[14] However, this is true only at such time as new residents move into the county. With the location of the industries in or near the main population centers of the county, it can safely be assumed that growth will take place in these areas.

The construction of the new 8.5 million dollar Nash General Hospital west of Rocky Mount, will spur development in this area. Other important factors exist within this general area that will add to the potential. Northern Nash School and a golf course are located north-west of the hospital site across U. S. 64. Convenience to the school, the hospital and to a golf course will surely

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[14] "How New Plants Help", Nations Business, December, 1962.

attract developers. The area will be protected by zoning to insure sound development. It is thought that the area south of U. S. 64, in the general vicinity of the hospital, will experience the immediate residential growth.

Tar River Reservoir will project its potential toward residential growth. Residential growth will probably take place first along the eastern end of the reservoir. Water based recreation and the construction of a private or public golf course would enhance the residential potential and it is anticipated that these facilities will be present.

The remaining municipalities and their immediate fringe areas excluding Rocky Mount, will experience little residential growth unless they acquire more industry. Nashville and Spring Hope are the only towns that are expected to gain residential growth due to industrial location.

In the rural county areas, residential construction will be limited (in most cases) to farm related residences. The factors beneficial for development do not exist in these areas. Natural limitations such as soil, excessive slope, and swamp areas, are not readily present. Normally there must be some natural or man-made attraction for residential construction and again farming seems to represent both of these attractions.

It can be assured that a portion of the residential development needed to house the future population in Nash County will take place in the form of the mobile home. The mobile home will normally attract the lower income bracket and the young family. In order that the mobile dwelling unit is properly developed, it should be placed in a mobile home park or a mobile home subdivision.

Electric power and telephone service can readily be obtained in all parts of the county, therefore, public utilities present no problem for future development. It is recommended that public utility lines be placed

underground where feasible.

Looking at the county in its entirety, residential development has some degree of potential in all areas, however, it can be seen that certain areas have a much greater potential than others and it can be assumed that the future growth will be a continuation of the present trend of growth in the urban areas of the county. (See Map 3 for expected growth areas.)

Industrial

In general, the soils, climate and topography in Nash County are conducive to industrial development. Although these factors are very important to the location of industry, many other factors determine location.

First, there should be an adequate labor force. Estimated recruitable labor for industrial development as of June 15, 1966 was 1365 skilled, semiskilled and unskilled persons.[15]

A technical institute has recently opened in the county. This is a very important attribute for an industry. The institute will train persons in many vocations, therefore, the number of skilled and trained employees will increase.

Nash County's recruitable labor supply is slightly above the June 15, 1966 state average per county of 1120, therefore, labor is available for most industrial needs.

Distance from major transportation routes is an important factor. In Nash County excellent transportation facilities are present in and around Rocky Mount, Nashville, Spring Hope, Whitakers and Battleboro. Most industries prefer to be located adjacent or very near a major thoroughfare or railroad and in most cases both.

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[15] Employment Security Commission of N. C.

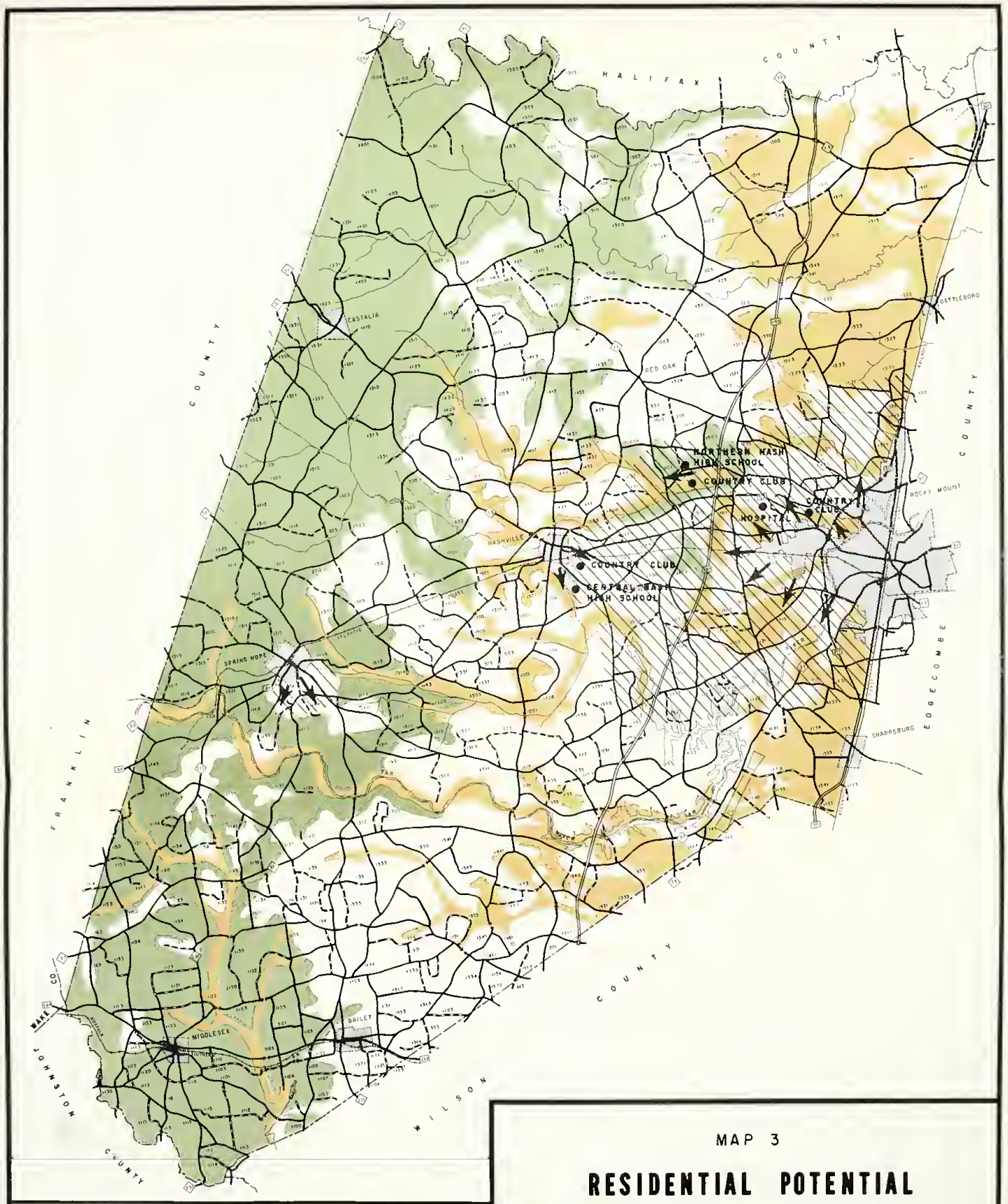
The above mentioned areas have both these facilities and all have experienced industrial growth. It is expected that the construction of the remaining portion of I-95 through Nash County will be an attraction to industrial prospects. Many industries today prefer to be adjacent to major thoroughfares merely for publicity, which this type site would provide.

Air travel has also influenced the growth of industry across the nation. It has been previously mentioned that a new modern airport is presently under construction in the southern portion of the county. This facility along with the existing facility will definitely enhance the industrial prospect. Convenience of travel is very important to the busy executive and the salesman. Many companies have their own aircraft and the existence of the Rocky Mount Municipal Airport and its adjacent industrial land could be very attractive to industry.

Nearness to adequate water and sewer facilities is very important to industry. This factor will eliminate, generally, the rural areas of the county. In a previous section of this report, available water and sewer facilities were noted. Generally, a municipality will assist in constructing water and sewer lines to an industry to insure its location near or within the municipality. If the industry cannot obtain its water from the municipality, it is the opinion of the N. C. Water and Air Resources Department that wells could be used, but water needs above 200,000 gallons per day would not be feasible.

Electric power is readily available by either Carolina Power and Light Company or Virginia Electric Power Company. However, industries depending on natural gas will find this to be a limiting factor except in the Rocky Mount area.

Map 4 indicates generalized areas in Nash County which provide the following location factors; good load



MAP 3

RESIDENTIAL POTENTIAL

SOILS WILL NOT SUPPORT SEPTIC TANKS

SOILS WITH MODERATE LIMITATIONS

GROWTH AREAS & GROWTH DIRECTION

NASH COUNTY

NORTH CAROLINA

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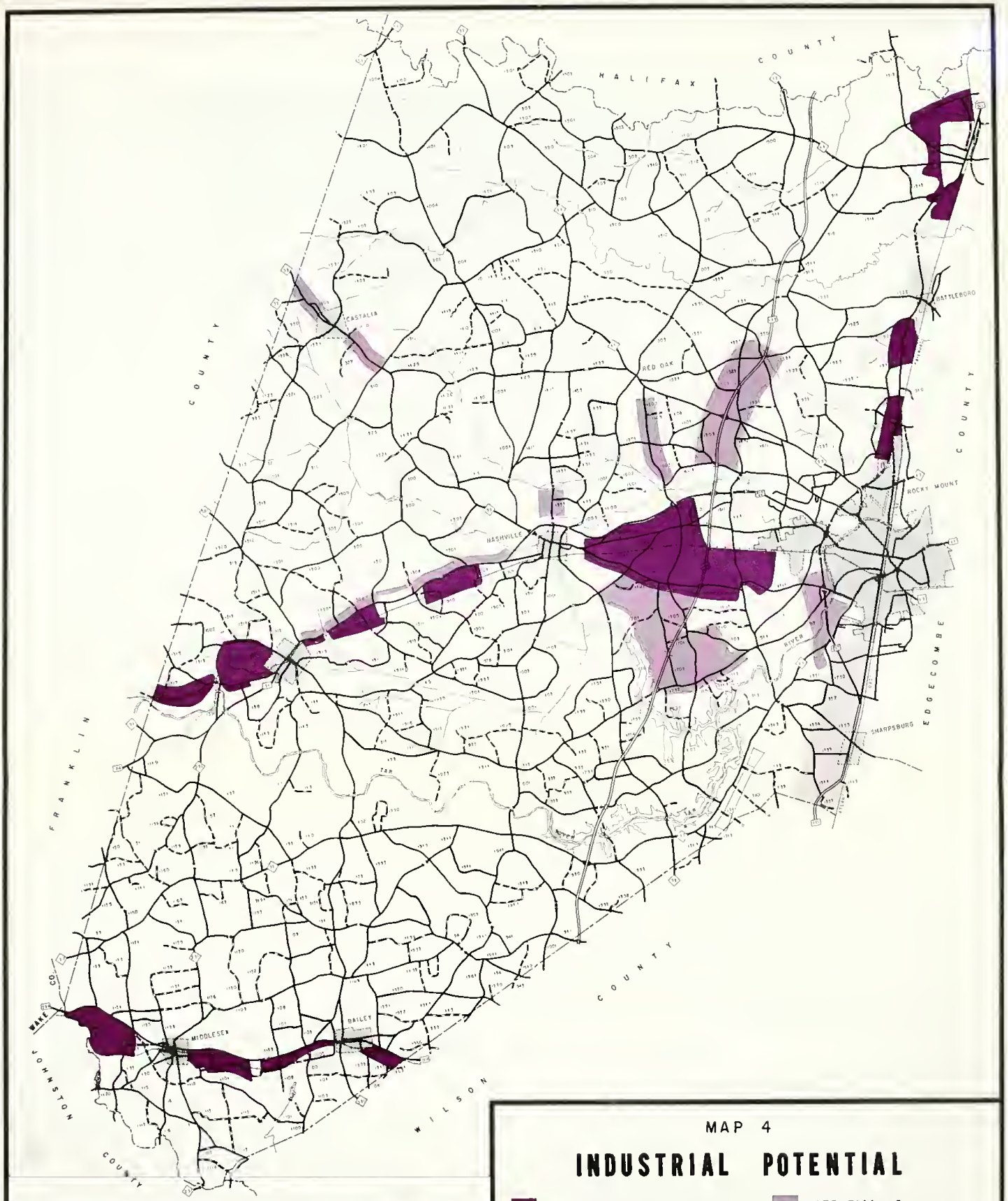
SCALE IN MILES



NASH COUNTY

NORTH CAROLINA

SCALE IN MILES 0 1 2 3

MAP 4

INDUSTRIAL POTENTIAL

POTENTIAL 1

1 RAIL FACILITIES
2 MAJOR HIGHWAYS
3 EXCELLENT SUPPORTING SOIL
4 NEARNESS TO WATER & SEWER
5 LEVEL TOPO

POTENTIAL 2

1 MAJOR HIGHWAYS
2 SUPPORTING SOILS
3 LEVEL TOPO
4 POSSIBLE WATER & SEWER

POTENTIAL 3

EXCELLENT POTENTIAL PROVIDED SOIL WILL SUPPORT INDUSTRY.

the population in the rural areas is scattered rather evenly throughout the county. This has necessitated the construction of many small stores in the county and they presently serve the everyday needs of the populace.

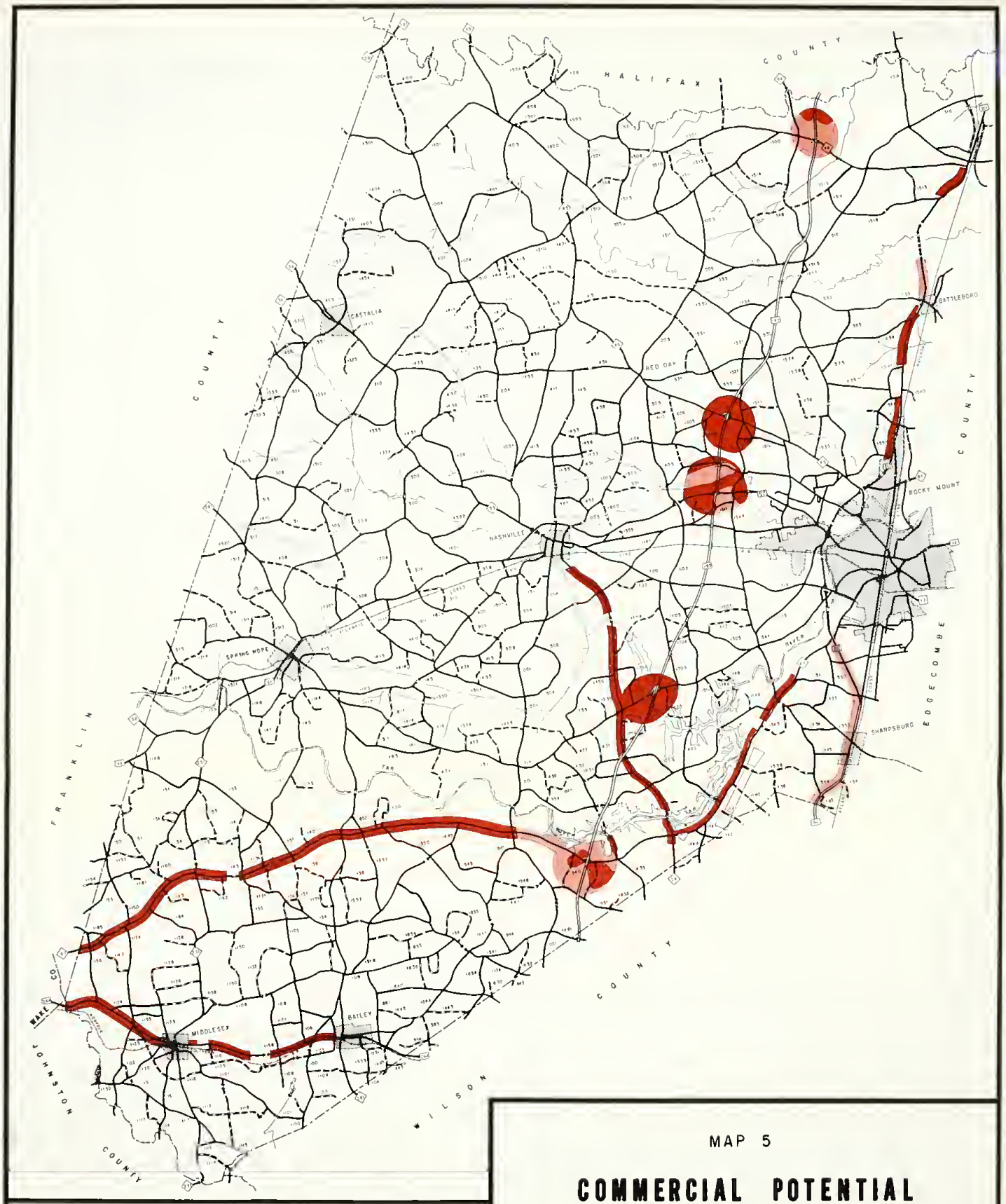
Factors conducive to the location of commercial developments in the rural areas are as follows: 1) intersections of major transportation routes, 2) presence of other commercial establishments, and 3) nearness to the customer.

Major shopping centers must locate near a large concentration of population. In Nash County this would presently limit this type development to the Rocky Mount area. It is not anticipated that the remaining municipalities in the county within the next ten years will develop to the point that they could support a major shopping center.

Map 3 has indicated a large residential growth area west of Rocky Mount. With the construction of Nash General Hospital and the Reservoir, and with the expected residential growth that these two developments could bring, it is safe to assume that a number of commercial establishments will develop in the immediate area. These will vary from the complete shopping center to the marina facility at the reservoir.

In the previous paragraphs, the commercial development noted has been directly related to the service of the people of Nash County. Nash County can anticipate commercial development directly related to the tourist trade. (See Map 5). The potential is high for new development along I-95. Motels, restaurants and service stations will possibly locate adjacent I-95 but they will be limited to areas where the tourists can leave I-95 conveniently and return. These locations will be the interchanges at N. C. 97, U. S. 64, S. R. 1717, and N. C. 43.

In summary, family operated general stores will continue to serve the rural area populations. Little



NASH COUNTY

NORTH CAROLINA

SCALE IN MILES 0 1 2 3

MAP 5

COMMERCIAL POTENTIAL

POTENTIAL 1

POTENTIAL 2
(POSSIBLE SOIL LIMITATIONS)

commercial expansion is anticipated for the municipalities if the present trend continues and the Rocky Mount area will experience the majority of the commercial development.

Recreation

Aside from the general location factors pertaining to recreation, the major potential for this type development in Nash County has existed for many years; people. Counties are not alone in the lack of recreational facilities, municipalities throughout the state and throughout Nash County also have a definite lack. Rocky Mount, however, has an excellent recreation plan. Not only do they have a plan, but they are presently following this plan and developing recreational areas.

When the Tar River Reservoir is completed, this area will exert a tremendous impact on the recreational potential for the county. Practically all types of recreation and leisure activities could be incorporated in the area. Facilities that should be considered are as follows: a public golf course, park areas with picnicking facilities, swimming areas, nature trails, bicycle paths, fishing areas, boating (motor and paddle) areas, and camping areas. The need for the above facilities presently exist in the county.

Although the actual reservoir property will be owned by the City of Rocky Mount, Nash County and the City must work together so that the badly needed recreational facilities will become a reality rather than a dream. It is recommended that Nash County and Rocky Mount budget funds to hire a professional recreation planner to prepare a detailed recreation plan for the reservoir area. This type of plan is needed to insure that the development in the area does not take away the potential that exists.

Other recreational potentials exist in the county but these are related to agricultural development, therefore, they will be discussed in the following section on "Agricultural Potential".

The Tar River Reservoir is not the only area that has recreational potential in the county. Several areas in the county, adjacent creeks, cannot be efficiently farmed or developed due to floodplains and wet land. These areas afford excellent potentials for nature reserves or conservation areas. (See Map 6).

Conservation of our natural resources is very important today, therefore, these areas that cannot be farmed or developed could be the beginning of nature reserves in Nash County. These areas would not require detailed development. Development would consist of picnic areas and nature trails. This type facility would contribute a much needed leisure activity.

Although potentials exist in the county for recreation, the potential cannot develop alone. The people of the county must have the incentive to work for recreation facilities and they must let this fact be known.

Agricultural

What is the potential for agriculture in Nash County? According to soil conditions, climate, and the growing season, the potential is excellent. (See Map 7). Only minor problems exist that are reflected in the soil conditions. The majority of the soil must be fertilized to produce the desired crop and several soils are subject to acute erosion. Good management practices can control the erosion.

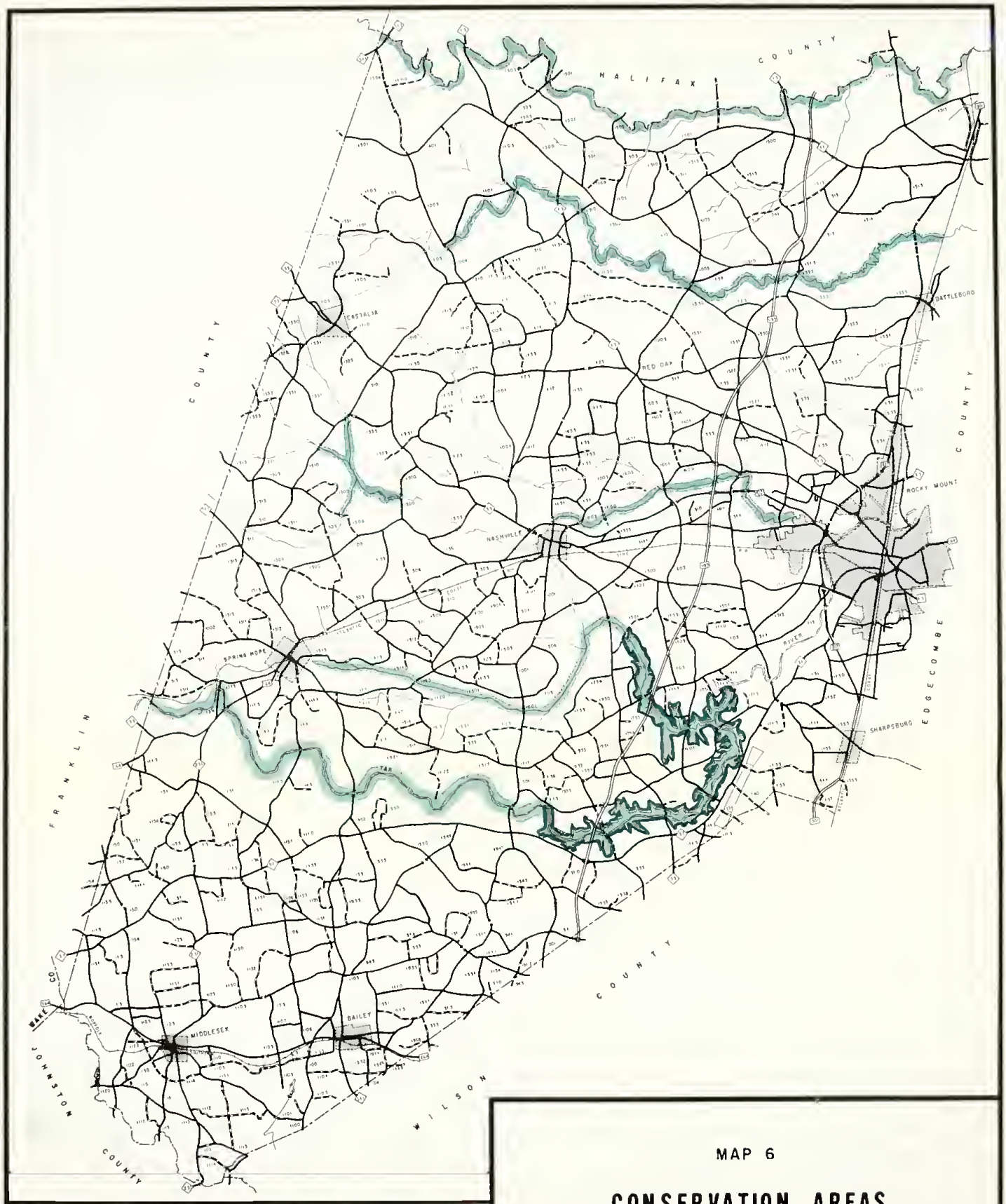
While there are very few natural limitations noted for agricultural development, there are some man-made limitations. These limitations have forced the agricultural industry into a transitional era. An excellent

example of this has been extracted from the following report: 1967 Annual Narrative Report, Nash County Agricultural Extension Service.

> "1967 has been a year of anxiety and frustration for Nash County farmers. Gross agricultural income is estimated to be the largest on record at 35.5 million dollars. At the same time most farmers are reporting reduced net profits caused by declining prices per unit of production and increasing production cost. Other major factors associated with the farmers' dilemna this year were an acute labor shortage, first year under a federal minimum wage law, lack of adequate tobacco mechanical harvesting equipment, chaotic tobacco marketing conditions, and a substantial carry-over of tobacco on many farms that could not be sold. In spite of the above drawbacks, total production of all agricultural commodities in the county increased during the year with the exception of cotton and a slight reduction in peanuts. These increases were brought about by the farmer's use of improved technological know-how and favorable weather conditions."

Therefore, the farming enterprise today has changed considerably from that of 20 years ago. The shortage of labor can be traced to the abudnance of industry today, paying much better wages than farming. In order that the farmer can effectively farm his crops with less laborers, he must turn to the machine for help.

Some agricultural experts have predicted that the farm of the future will be very large, completely mechanized and owned by one family or person. It is possible that this trend has begun. Statistics have shown that in 1959 the average size farm in Nash was 69.1 acres and in 1964, the average size was 83.6 acres. The average small farmer cannot survive the labor shortage and the



MAP 6

CONSERVATION AREAS

CONSERVATION AREAS

TAR RIVER RESERVIOR

NASH COUNTY

NORTH CAROLINA

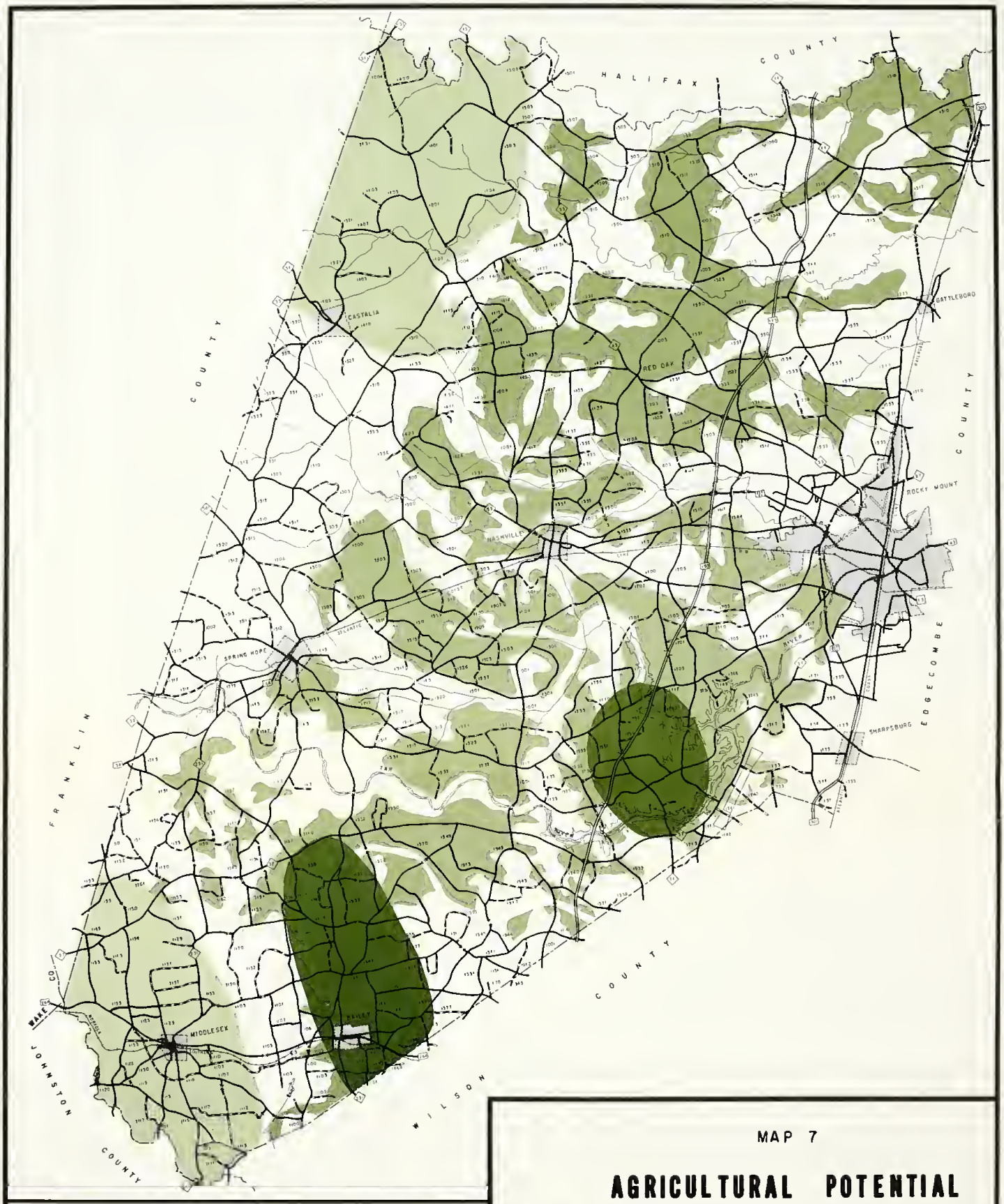
SCALE IN MILES 0 1 2 3

trend toward mechanization, therefore he must sell.

But maybe this small farmer or if he be a large land owner, can supplement his farm income and therefore help offset the large expense of mechanization. In a previous chapter two such ways have been discussed: 1) the farm forestry potential and 2) the farm recreational area. In both instances it is anticipated that the actual capital outlay will be smaller than the income from the added farm enterprise.

Many farmers in Nash County have gone into the poultry business, some full-time and others part-time. However, it has been noted that before money is invested that professional guidance should be sought. An excellent agency to start with is the County Agricultural Extension Agent.

In summary, the need for agricultural products always exist, and the potential such as good soil, climate, and markets will remain but the laborer will not. In all probability, mechanization will till and harvest the crops and the laborers that once worked in the field will work in a plant either preparing the farmers product or some other needed product.



NASH COUNTY

NORTH CAROLINA

SCALE IN MILES 0 1 2 3

MAP 7

AGRICULTURAL POTENTIAL

- PRIME AGRICULTURE AREAS
- BEST SOIL ASSOCIATION FOR AGRICULTURAL PRODUCTION
- LEAST DESIRABLE CROP LAND